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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,668	03/20/2002	Andreas Faerbert	112740-624	2839

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EXAMINER

CONNELLY CUSHWA, MICHELLE R

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,668

Applicant(s)

FAERBERT ET AL.

Examiner

Michelle R. Connelly-Cushwa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some * c) ☐ None of:
 - 1. ☒ Certified copies of the priority documents have been received.
 - 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 0702.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The prior art documents submitted by applicant in the Information Disclosure Statement filed on July 9, 2002 have been considered and made of record, except for those documents that are lined through. The documents that have not been considered were provided in a foreign language without a translation (note the attached copy of form PTO-1449).

Drawings

Two (2) sheets of formal drawings, including Figures 1 and 2, were available at the time this case was examined. The third sheet, including Figure 3, however, was not scanned into the Image File System. The Examiner notes that there are three sheets of drawings in the priority papers and has considered Figure 3 of the priority papers for the purposes of Examination. The Examiner has also sent an error message to OIPE and requested that the third page of drawings, including Figure 3, be scanned into the Image File of this case, however, it was not felt necessary to delay examination until the third page of drawings was scanned.

Applicant is requested to include a copy of the third page of drawings, including Figure 3, with the response to this office action, in order to avoid any delays that may be

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caused if the problem has not been corrected by the time Applicant's response is received.

Specification

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 7-11, 13-15 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Bigo et al. ("320-Gb/s (32 x 10 Gb/s WDM) Transmission Over 500km of Conventional Single-Mode Fiber with 125-km Amplifier Spacing").

Regarding claim 7; Bigo et al. discloses an optical transmission system in Figures 1 and 2, comprising a fixed number of optical fiber line sections of virtually the same length (two SMF sections of 130 km) with each section including an optical fiber (SMF) and a dispersion compensating unit (DCF), each dispersion compensating unit (DCF) having virtually the same compensation value (see section II. Experimental Setup and Results of Bigo et al.), which is determined from dispersion selected from a

calculated accumulated residual dispersion and an estimated accumulated residual dispersion for at least virtually uniformly distributed undercompensation of the fiber dispersion of the fixed number (2) of optical fiber line sections.

Regarding claim 8; the dispersion compensating units (DCF) are provided for compensating the fiber dispersion of all the optical fiber line sections (SMF).

Regarding claims 9 and 13; a fiber line section having an optical fiber (SMF) and a dispersion compensation unit (DCF) implements or forms an optical transmission module in the invention of Bigo et al.

Regarding claims 10 and 14; the transmission system is formed from a plurality of optical modules arranged in series in the invention of Bigo et al.

Regarding claims 11, 15 and 18; the optical fibers (SMF) of the fiber line sections are 130 km in length. This meets the limitation of claims 11, 15 and 18, which only requires an optical fiber line section to have a minimum length of 20 kilometers, thus any length greater than 20 kilometers meets this limitation.

Claims 7-11, 13-15 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Essiambre (US 6,583,907 B1).

Regarding claim 7; Figure 1 of Essiambre discloses an optical transmission system comprising a fixed number of optical fiber line sections of virtually the same length (80km) with each section including an optical fiber (STD) and a dispersion compensation unit (DCF, 26), each dispersion compensation unit having virtually the same compensation value, which is determined starting from dispersions selected from a calculated accumulated residual dispersion and an estimated accumulated residual

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dispersion for an at least virtually uniformly distributed undercompensation of the fiber dispersion of the fixed number of optical fiber line sections (see column 1, lines 19-36).

Regarding claim 8; the dispersion compensation units (26) are provided for compensating the fiber dispersion of all the optical fiber line sections.

Regarding claims 9 and 13; a fiber line section having an optical fiber (STD) and a dispersion compensation unit (DCF, 26) implements or forms an optical transmission module.

Regarding claims 10 and 14; the optical transmission system is formed from a plurality of optical transmission modules arranged in series in Figure 1 of Essiambre.

Regarding claims 11, 15 and 18; the optical fiber (STD) of the fiber line sections have a length of 80 km, and, therefore, meet the limitation of claims 11, 15 and 18, which only requires that the fiber line sections have a minimum length of 20 km, thus any length greater than 20 kilometers meets this limitation.

Claims 7, 8, 9 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Akasaka et al. (US 5,995,694).

Regarding claim 7; Figure 1 of Akasaka et al. discloses an optical transmission link, which is inherently employed in an optical transmission system, comprising a fixed number of optical fiber line sections (one section) with the section having length and including an optical fiber (SMF) and a dispersion compensation unit (DCF/DSF), the dispersion compensation unit having compensation value that is determined starting from calculated/estimated accumulated residual dispersion (see column 5, line 35, through column 12, line 28 for estimated/calculated values) for an *at least* virtually

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uniformly distributed undercompensation of the fiber dispersion of the fixed number of optical fiber line sections (one section).

Regarding claim 8; the dispersion compensation unit is provided for compensating the fiber dispersion of the optical fiber line section.

Regarding claims 9 and 13; the fiber line section having an optical fiber and the dispersion compensation unit implements or forms an optical transmission module.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 16, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bigo et al. ("320-Gb/s (32 x 10 Gb/s WDM) Transmission Over 500km of Conventional Single-Mode Fiber with 125-km Amplifier Spacing").

Regarding claims 12, 16, 17 and 19; Bigo et al. teaches all of the limitations of claims 12, 16, 17 and 19, except for specifically stating that the fiber line sections can be implemented in a bi-directional data transmission system. Transmitters and receivers, however, are commonly employed in optical units having both transmitters and receivers, and optical fibers are commonly used to transmit data in bi-directional systems incorporating transmitter/receiver units at both ends. Therefore, one of ordinary skill in the art would have found it obvious to incorporate optical

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transmitter/receiver units as the optical transmitter and/or receiver disclosed by Bigo et al., since these units are well known in the art and are commonly used for transmitters and receivers, to transmit data bi-directionally over the optical fiber, since this is also commonly practiced in the art and eliminates the cost in of providing an additional transmission line to communicate in the opposite direction.

Claims 12, 16, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Essiambre (US 6,583,907 B1).

Regarding claims 12, 16, 17 and 19; Essiambre teaches all of the limitations of claims 12, 16, 17 and 19, except for specifically stating that the fiber line sections can be implemented in a bi-directional data transmission system. Transmitters and receivers, however, are commonly employed in optical units having both transmitters and receivers, and optical fibers are commonly used to transmit data in bi-directional systems incorporating transmitter/receiver units at both ends. Therefore, one of ordinary skill in the art would have found it obvious to incorporate optical transmitter/receiver units as the optical transmitter and/or receiver disclosed by Essiambre since these units are well known in the art and are commonly used for transmitters and receivers, to transmit data bi-directionally over the optical fiber, since this is also commonly practiced in the art and eliminates the cost in of providing an additional transmission line to communicate in the opposite direction.

Claims 10-12 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akasaka et al. (US 5,995,694).

Regarding claims 10 and 14; Akasaka et al. discloses all of the limitations of these claims, as applied above, except for specifically stating that a plurality of the optical transmission modules (links) can be connected in series. One of ordinary skill in the art would have recognized that the transmission distance of the optical transmission link disclosed by Akasaka et al. could be extended by the link to connect additional identical optical transmission links to increase the transmission distance while maintaining virtually zero dispersion for the transmitted signal. Therefore, one of ordinary skill in the art would have found it obvious to connect a plurality of the optical transmission modules (links) disclosed by Akasaka et al. in series.

Regarding claims 11, 15 and 18; the optical fibers in the invention of Akasaka et al. have a length of 42 km, which is sufficient to meet the limitation of claims 11, 15 and 18, which requires the optical fibers to have a minimum length of 20 kilometers, thus any length greater than 20 kilometers meets this limitation.

Regarding claims 12, 16, 17 and 19; Akasaka et al. discloses and/or suggests all of the limitations of these claims as applied above, except for specifically stating that the optical transmission system is a bi-directional transmission system. Akasaka et al. does not disclose that the optical transmission link is employed in any specific optical transmission system, thereby suggesting that the particular optical transmission system the optical fiber link is incorporated in lacks criticality. Therefore, one of ordinary skill in the art would have found it obvious to incorporate the optical transmission link disclosed by Akasaka et al. in any optical transmission system, including bi-directional data transmission systems, since such transmission systems are well known in the art and it

is advantageous to compensate for dispersion in bi-directional data transmission systems.

Conclusion

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning the merits of this communication should be directed to Examiner Michelle R. Connelly-Cushwa at telephone number (571) 272-2345. The examiner can normally be reached 9:00 AM to 7:00 PM, Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B. Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general or clerical nature should be directed to the Technology Center 2800 receptionist at telephone number (571) 272-1562.

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Michelle R. Connelly-Cushwa
Michelle R. Connelly-Cushwa
Patent Examiner
February 24, 2004